AMENDMENTS TO THE CLAIMS

1. (Currently amended) A mobile enhanced scanning solutions module comprising:

a flow control subsystem to control the rate of flow of a carrier gas obtained from an environmental subsurface;

a plurality of measurement subsystems to measure or detect in real time at least one contaminant in said carrier gas, said plurality of measurement subsystems comprising:

~~a flow control subsystem,~~

a detector subsystem coupled to said flow control subsystem,

a moisture separator subsystem coupled to said flow control subsystem, and

a sampling subsystem coupled to said flow control subsystem;

wherein said flow control subsystem provides switching, valve control, and rate of flow of said carrier gas in real time among said plurality of measurement subsystems;

a global positioning system (GPS) receiver integrated with a mobile data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detector subsystem and/or said sampling subsystem; and

a software control subsystem coupled to said plurality of measurement subsystems and said flow control subsystem, to sense conditions in real time including said measured or detected contaminant,

~~wherein said software control subsystem is operative~~and to at least one of configure or reconfigure said flow control subsystem and/or combinations of said plurality of measurement subsystems in real time, prior to exhaust, including timing, sequencing, monitoring, logging and/or recording data, ~~intelligently adapt, on-the-fly, to at least one of configure and/or reconfigure said plurality of measurement subsystems prior to exhaust~~ in response to at least one of said sensed conditions, an operator selection, and/or preprogrammed conditions.

2. (Previously Presented) The enhanced scanning solutions module of claim 1, wherein said sampling subsystem comprises at least one of:

a sample loop; an absorbent trap; and/or a gas chromatography injection port.

3. (Previously Presented) The enhanced scanning solutions module of claim 1, further comprising at least one of:

an in situ gas stream; a dryer; a moisture sensor detector; a pneumatic supply; a power supply; a bypass module; a feedback signal; a detector subsystem feedback signal; a calibration material; a tracer gas; a calibration gas; and/or a pressure control subsystem.

4. (Currently amended) A mobile enhanced scanning solutions module comprising:

a plurality of measurement subsystems to measure or detect in real time at least one contaminant from a sample from an environmental subsurface, said plurality of measurement subsystems comprising:

a detector subsystem configured to be selectively coupled to an in situ gas stream, and

a sampling subsystem selectively coupled to the in situ gas stream;

a global positioning system (GPS) receiver integrated with a mobile data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detector subsystem and/or said sampling subsystem;

a software control subsystem coupled to said plurality of measurement subsystems to sense conditions in real time including at least one measured or detected contaminant ~~;~~ and to at least one of configure or reconfigure combinations of said plurality of measurement subsystems in real time, prior to exhaust, including timing, sequencing, monitoring, logging and/or recording data,

~~wherein the enhanced scanning solutions module is operative to intelligently adapt on-the-fly to at least one of configure and/or reconfigure said plurality of measurement subsystems prior to exhaust,~~ in response to at least one of said sensed conditions, an operator selection, and/or preprogrammed conditions; and

wherein said environmental subsurface comprises an area beneath at least one of a surface of earth, and/or a surface of a body of water.

5. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising:

a moisture separator subsystem coupled to said software control subsystem, wherein said moisture separator subsystem is configured to be selectively coupled to the in situ gas stream.

6. (Previously Presented) The enhanced scanning solutions module of claim 4, wherein said sampling subsystem comprises at least one of:

a sample loop; an absorbent trap; and/or a gas chromatography injection port.

7. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising at least one of:

a dryer; a moisture separator; a moisture sensor detector; a pneumatic supply; a power supply; a bypass module; a feedback signal; a detector subsystem feedback signal; a calibration material; a tracer gas; a calibration gas; and/or a pressure control subsystem.

8-9. (Cancelled)

10. (Previously Presented) The enhanced scanning solutions module of claim 4, wherein the enhanced scanning solutions module further comprises:

an interface between said detector subsystem and a gas handling subsystem allowing insertion of at least one of: a sample, another detector, a flowpath, a flow path rate, a dryer, a moisture separator, a moisture sensor detector, a bypass, a feedback, a detector subsystem feedback, a tracer gas, a calibration gas, a calibration material, a sample loop, an absorbent trap, a gas chromatographic injection port, and/or a trap.

11. (Previously Presented) The enhanced scanning solutions module of claim 4, said software control subsystem comprises at least one of:

a timer; a data logger; a sequencer; a valve control system; a monitor; a display; and/or a recording function.

12. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising a membrane interface probe apparatus configured to be coupled to said in situ gas stream comprising:

a membrane interface probe (MIP) housing having a diameter of at least about 2.125 inches.

13. (Previously Presented) The enhanced scanning solutions module according to claim 12 wherein said MIP housing is adapted to couple with a rod system.

14. (Previously Presented) The enhanced scanning solutions module according to claim 12 wherein said MIP housing is adapted to be coupled with a push and hammer system.

15. (Previously Presented) The enhanced scanning solutions module according to claim 12 wherein said MIP housing is adapted for low sidewall support drive rod string applications.

16. (Previously Presented) The enhanced scanning solutions module according to claim 12, wherein said MIP housing comprises two or more permeable membranes.

17. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising at least one of:

a membrane interface probe (MIP) housing having two or more permeable membranes coupled to said housing; and/or a MIP adapted to provide circumferential sensing.

18. (Previously Presented) The enhanced scanning solutions module of claim 17, wherein said two or more permeable membranes of said MIP housing are arranged equidistant about a circumference of said MIP housing.

19. (Previously Presented) The enhanced scanning solutions module of claim 18, wherein said MIP housing is operative to provide circumferential collection of volatile organic mass by said MIP housing.

20. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising a membrane interface probe apparatus comprising:

a membrane interface probe (MIP) comprising at least one of a waterproof electrical coupling and/or an O-ring mechanical coupling, wherein at least one of said waterproof electrical coupling and/or said O-ring mechanical coupling are watertight.

21. (Previously Presented) The enhanced scanning solutions module of claim 4, further comprising a modular membrane interface probe (MIP) apparatus comprising:

a modular membrane interface probe (MIP) comprising a plurality of modular components allowing field serviceable replacement of any malfunctioning components of said plurality of modular components other than a permeable membrane and/or an entire new MIP.

22. (Previously Presented) The module of claim 21, wherein the modular MIP apparatus comprises at least one of:

an external barrel having a cavity; and/or

an inner core barrel assembly field-insertable into said cavity having a heater cavity, wherein said heater cavity is operative to receive a field-insertable and removable cartridge heating element.

23. (Original) The module of claim 21, wherein the modular MIP apparatus comprises a removable conductivity nose assembly.

24. (Previously Presented) The module of claim 21, wherein the modular MIP apparatus further comprises a field-insertable and removable cartridge heating element.

25. (Previously Presented) The module of claim 21, wherein the modular MIP apparatus comprises at least one of a waterproof electrical connector and/or an O-ring seal.

26. (Previously Presented) The module of claim 4, further comprising a membrane interface probe apparatus comprising:
a membrane interface probe (MIP) housing comprising an internal removable trap adapted to collect and/or concentrate one or more volatile organic compounds.

27. (Previously Presented) The module of claim 26, wherein the MIP apparatus, wherein said removable trap is adapted to detect concentration levels of said one or more volatile organic compounds, and to specifically identify said one or more compounds through chromatographic analysis.

28. (Previously Presented) The module of claim 26, wherein the MIP apparatus, further comprising: a calibrator adapted to calibrate said MIP using chromatographic methods.

29. (Previously Presented) The module of claim 26, wherein the MIP apparatus further comprises means for at least one of trapping and/or concentrating of volatile organic compounds during at least one of MIP sampling and/or logging events.

30. (Previously Presented) The module of claim 4, further comprising a membrane interface probe apparatus comprising:

a membrane interface probe (MIP) comprising a heated transfer line from a body of said MIP to a surface detector suite adapted to minimize loss of volatile organic compounds in a cold transfer line.

31. (Previously Presented) The module of claim 4, wherein said enhanced scanning solutions module, further comprises: a sample introduction system coupled to said MIP adapted to introduce a

calibration gas; and to allow for simultaneous sampling of a volatile organic gas stream for chromatographic analysis.

32. (Previously Presented) The module of claim 4, further comprising:

a depth measurement device coupled to said global positioning system (GPS) receiver integrated with said mobile data acquisition system configured to allow simultaneous geo-referencing in at least three (3) dimensions of at least one of said detection subsystem and/or said sampling subsystem, in an environmental subsurface, wherein said environmental subsurface comprises an area beneath at least one of a surface of earth, and/or a surface of a body of water, and wherein said in situ gas stream is coupled to a moveable direct reading sensor in direct contact with at least one of soil, water and/or vapor.

33. (previously presented) The enhanced scanning solutions module of claim 1, further comprising:

a feedback signal mechanism coupled from at least one of said plurality of measurement subsystems to at least said flow control subsystem, wherein said flow control subsystem is further coupled to said software control subsystem.

34. (currently amended) The enhanced scanning solutions module of claim 1,

wherein said software control subsystem is operative to ~~intelligently analyze and adapt on-the-fly to~~ configure ~~and~~/or reconfigure said plurality of measurement subsystems~~,~~ in response to at least one of: a measured or detected volatile organic compound or sensed hydrogeological environmental conditions ~~including sensed environmental subsurface data~~, wherein said environmental subsurface comprises an area beneath at least one of a surface of earth, and/or a surface of a body of water, and

wherein said measured or detected volatile organic compound or sensed hydrogeological environmental conditions are measured or detected from said carrier gas received from a membrane interface probe (MIP) sensor ~~is~~ driven into said environmental subsurface and ~~said MIP sensor is~~ in direct contact with soil as well as at least one of ground water, and/or contaminant vapor.